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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,760	03/25/2004	Arif Kazi	71368	7348
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MCGLEW & TUTTLE, PC P.O. BOX 9227 SCARBOROUGH STATION SCARBOROUGH, NY 10510-9227			OLSEN, LIN B	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,760	KAZI ET AL.	
Examiner	Art Unit		
Lin B. Olsen	3609		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 25 March 2004.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-44 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1-44 is/are rejected.
7) Claim(s) 21,27,30,32,37,38,41,43 and 44 is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 25 March 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/11/2004, 10/25/2004, 8/7/2007.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
5) Notice of Informal Patent Application
6) Other: ____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because reference number 6.3 used in the specification is not found on the figures. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

Claims 21, 27, 30, 32, 37, 38, 41, 43 and 44 are objected to because of the following informalities:

Claim 27 is objected to because the phrase "the first transmitting device" does not have an antecedent basis.

Claim 30 is objected to because the phrase "the second transmitting device" does not have an antecedent basis.

Claim 32 is objected to as not further limiting the claim from which it depends. Claim 32 is a mere rewording of claim 31.

Claims 21, 37, 38, 41, 43 and 44 are objected to as incorporating wherein clauses with no verb. The clauses will be interpreted as reading "having" in place of each "wherein". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of these claims recites an "opposite monitoring device." It is not clear what this monitoring device is opposite to. The only support for this term is in the summary of the invention, where the first paragraph of page 6 of the application does not clarify what an opposite monitoring device is. The following art rejections are given using reasonable interpretations of the claims consistent with the specification and the art used.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 7-12, 17, 19, 21, 31-35, 38-40, and 42-44 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Pub. 2001/0035729 to Grainger et al. (hereafter referred to as Grainger). Grainger is concerned with connecting a mobile electronic terminal to a machine or group of machines.

Method and device claims will be grouped together wherever possible whenever comparable limitations are encompassed by the claims.

Regarding independent **claim 21** and independent **claim 1**, which are comparable device and method claims,

- “a device for controlling a plurality of manipulators, having a plurality of control units associated with the manipulators” - reads on Grainger figure 1, where robots (3) or manipulators are controlled by control units (5).
- “so that each control unit controls at least one manipulator” - as shown in fig 1.
- “wherein [having] a common operating device connectable with at least one specific control unit for operating the manipulators” - reads on operating device (9) shown as connected either to a control unit, via socket connector (13) to control its robot (5) or more directly to the bus. (Fig.1 described in ¶s 34-47, in particular ¶40)

Regarding **claim 2** which is dependent on claim 1, “wherein the operating device generates control signals directly suitable for a movement control of the particular manipulators (movement- relevant control signals)”. - Reads on ¶43 to ¶44, 1st 6 lines

where the control and monitoring device (9) is the control panel device for a machine and connecting the control and monitoring device (9) can be accomplished by connecting it to a control unit or the network. The robot can be operated and controlled by the control and monitoring device (9).

Regarding **claim 4**, which is dependent on claim 1, “the operating device generates further, not directly movement-relevant control signals” reads on ¶45 1st sentence, where diagnostic controls and controls for test purposes may be sent to the machine from the control and monitoring device (9).

Regarding **claims 7, 8 and 31**, which are dependent respectively on claims 1 and 21, “ the operating device has a display device (graphic display) for displaying operating surfaces - (BOF) of different control units.” Reads on ¶41 where the control and monitoring device has LCD screen or a screen capable of handling graphics. The display can show plant, process data, operating instructions, control features and similar functions.

Regarding **claim 12**, which is dependent on claim 8, “wherein image contents of the control unit associated with the selected manipulators are digitally transmitted to the operating device.” reads on ¶41 where the control and monitoring device has a display capable of handling graphics. This display can show control features of the machine (2). is needed to operate a machine. Since the control and monitoring device (9) is acting

as the display for the control unit (5), it displays the image contents of the control device.

Regarding **claim 32**, which is dependent on claim 31, “wherein the operating device is constructed for visualizing operating surfaces (BOF) of different control units” reads on” reads on the monitoring unit (9) which at ¶41 is described as being able to display control features to monitor and optionally facilitate operation of the machine.

Regarding **claim 33**, which is dependent on claim 31 “on the operating device is in each case displayed the operating surfaces (BOF) of the associated control unit.” reads on ¶40 1st sentence, where the control and monitoring device is needed to operate a machine. Since the control and monitoring device (9) is acting as the display for the control unit (5), it does display the image contents of the control device.

Regarding **claims 17 and 34**, which are dependent on claims 17 and 21 respectively, “display, control and/or safety signals can be transmitted on a bus/data channel” reads on fig 3, where the control and monitoring device (9) is connected to the bus (8) at connection point (13) and completely controlling the machine with port 20, as described in ¶s 61-62 1st 2 sentences. Image information, data and control signals generated by the control unit (5) are transmitted through a same channel (8).

Regarding **claim 35**, which is dependent on claim 31, “display and control signals between the control units and the operating device can be transmitted on a common data channel” reads on Fig.3 where data channel (8) is used to carry all information between the control unit (5) and the control and monitoring device (9).

Regarding **claims 9-11, 19 and 38-40**, which are ultimately dependent on claims 8 and 31 respectively, “[having] a clear association between the displayed operating surface (BOF) and the selected manipulator,” reads on ¶67 1st 3 sentences. where indicators on the display and machine are indicated. Further the use of acoustic signals, or graphic markings that are in common between the machine and control and monitoring device are indicated.

Regarding **claim 42**, which is dependent on claim 21, “wherein control signals generated by the operating device can only be directed following verification to the associated control unit,” reads on ¶51 where a logon procedure is a prelude to operation of a control unit by the control and monitoring device.

Regarding **claim 43**, which is dependent on claim 42, “optical and/or acoustic signal generators (S) located on the manipulators and which are constructed for displaying a given link, between the operating device and the manipulator” reads on fig. 3 and ¶67 1st 2 sentences, where optical and/or acoustic signal generators are used to display the active link.

Regarding **claim 44**, which is dependent on claim 43, "a monitoring device for monitoring the operability of the signal generator" reads on ¶67 last sentence, where an indication on the graphical display is used to confirm the operability of the signal generator.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Granger in view of The Microsoft Press Computer Dictionary, Third Edition (hereafter Computer Dictionary).

Regarding **claim 13**, which is dependent on claim 12, "wherein image contents data are compressed prior to transmission." Reads on the well-known technique of

image compression as defined on page 245 of the computer dictionary. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the known technique of image compression to data transmission to Grainger's control and monitoring device to yield predictable result of faster image data transmission to the device.

Regarding **claim 14**, which is dependent on claim 12, "wherein standard image elements are transmitted as control instructions and independently displayed by the operating device." reads on the description of a graphics terminal on page 221-222 in the computer dictionary. It would have been obvious to one of ordinary skill in the art at the time of the invention to supply the image to Grainger's control and monitoring device in the common format as illustrated by the graphics terminal definition to yield predictable result of image data transfer.

Regarding **claim 15**, which depends on claim 8, "wherein image information is transmitted as pixel data." Reads on the description of image on page 245 and pixel image on page 367 in the computer dictionary. It would have been obvious to one of ordinary skill in the art at the time of the invention to supply the image in a known format as illustrated by the image definition to Grainger's control and monitoring device to yield predictable result of image data transfer.

Claims 5, 16, 18, 20, 25, 26, 29, 30 and 41, are rejected under 35 U.S.C. 103(a) as being unpatentable over Granger in view of U.S. Patent No. 6,697,681 to Stoddard et al (hereafter referred to as Stoddard). Stoddard describes a shared operating unit for a

network of programmable equipment. The network is shown in Fig 1, where the item designated as 70 is identified as a "cell controller" at col.3, line 45.

Regarding **claim 16**, which is dependent on claim 2, "wherein the transmission of movement-relevant signals via the first transmitting device is controlled by a first monitoring device and in the case of an interruption of transmission a movement-relevant control signal is generated by said monitoring device." reads on Stoddard where the cell controller ensures the integration of data between each component of the system – col. 3, lines 45-47. Since the cell controller is connected to the cell network 110 and each unit of programmable industrial equipment is connected to the cell network – col. 3, lines 59-61, the cell controller can send at least a stop command which is a movement relevant control signal, to a the devices. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the known technique of having a cell controller monitor and send control signals to improve Granger's similar group of machines in the same way.

Regarding **claim 18**, which is dependent on claim 7, "wherein the image information data and control signals generated by the operating device are transmitted on different channels being controlled by a second opposite monitoring device." Reads on Stoddard where the cell controller (70 of Fig. 1) acts as a monitoring device. Control signals generated by the sharable operating unit (10 in Fig. 1) are directed through the robot controller (30) to the robot, while information data is retained at the sharable control unit and displayed thereon or at the optional control panel (24) col. 3, lines 30 - 37. It would have been obvious to one of ordinary skill in the art at the time of the

invention to have the cell controller monitor the system and send control signals directly to the designated robot for improved efficiency.

Regarding **claim 20**, which is dependent on claim 19, "wherein the operability of the signal generator is monitored by a monitoring device." reads on Stoddard where the cell controller monitors the actual performance of each piece of equipment – col. 3, line 52. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the known technique of having a cell controller to improve Granger's similar group of machines to allow monitoring of the system in the same way.

Regarding **claim 41**, which is dependent on claim 21, "wherein [having] a safety transmitting device interconnecting the control units of all the manipulators" reads on Stoddard col. 9, lines 49-54 where the emergency stop function operates cell-wide. All emergency stop buttons stop all robots in a cell. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the known technique of a cell-wide emergency function to similar system ready to accept such a capability such as Grainger's to yield the predictable result of improved safety.

Regarding **claims 5, 25 and 29**, which depend respectively on claims 4 and 21, "wherein the further signals are exclusively directed to a terminal device present in a non-real time area of a control unit for the display of operating surfaces of different control units" reads on Stoddard, fig. 1 element 24 – the control panel or operator's panel which includes display and communications capability to any controller or

computer in the network, col. 3, lines 32-34. Terminal devices are normally connected to networks by lower speed connections than many other devices. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the terminal device from Stoddard's system in the system of Grainger to allow an operator to monitor the running machine.

Regarding **claim 26**, which is dependent on claim 21, "wherein at least one control unit has a detecting device for detecting a control unit controlling the selected manipulators" reads on Stoddard's operator's console (24) having it's functionality incorporated in the shared operating unit (10) as suggested at col. 3, lines 29-38. It would have been obvious to one of ordinary skill in the art at the time of the invention to allow the Grainger's operating device to detect the state of the network as Stoddard's shared operating unit could to yield the predictable result of improved the safety.

Regarding **claim 30**, which is dependent on claim 25, "wherein all the control signals between the terminal device and an operating surface (BOF) can be communicated to the associated control unit by means of the second transmitting device" reads on Stoddard Fig. 1, where signals between operating panel 24 and robot controller 30 can reflected on the control handle (20) and hence the shared operating unit (10).

Claims 3, and 22 - 24, are rejected under 35 U.S.C. 103(a) as being unpatentable over Granger in view of the publication of German Patent No. 101 47 432 A1 to Siemens, invented by Franke et al. (hereafter referred to as Franke). Franke describes a means of scalable communication interfaces for automation components. The US PGPubs document 2004/0105398, the US equivalent application, will be used to provide references to Franke.

Regarding claims 3 and 22, which are dependent on claims 2 and 21 respectively. "the control units are in each case subdivided into areas (RT and NRT) set up for implementing a real time and a non-real time operating system." Reads on Franke fig. 5 – element 41, which is labeled "drive" for convenience but could be a control device, is subdivided into fast (RT) and slow (NRT) sections designating communications channels, but each communication channel needs an appropriate operating system supporting it. It would have been obvious to one of ordinary skill in the art at the time of the invention to use different speed communications in the monitoring control device; faster for hard-wired connections carrying movement-relevant control signals and slower in wireless connections as shown in Granger fig. 2 to yield predictable result of communications tailored for the data carried.

Regarding claim 23, which is dependent on claim 22, "wherein the real time areas (RT) of the control units are constructed for the processing of control signals (movement-relevant control signals) directly suitable for the movement control of the

particular manipulators." reads on Grainger where the hard-wired connections (6) of Fig.2, are constructed for the carrying control signals.

Regarding **claim 24**, which is dependent on claim 23, "wherein the real time areas (RT) of the control units are connected by means of a first transmitting device and the non-real time areas (NRT) of the control units are connected by means of a second transmitting device." Reads on Grainger where the hard wired connections carry real time control signals and the wireless connection carries connection and indicator signals.

Claims 6, 27-28 and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Granger in view of U.S. Patent No. 6,922,611 to Lapham (hereafter referred to as Lapham). Lapham describes an automation equipment control system that incorporates a non-real-time general-purpose computer system and a real-time robot control subsystem. A two manipulator system is illustrated in Fig. 9. Referring to fig. 1, the control system 10 including the general purpose computer 14 and real-time computer subsystem 16 would integrate into Grainger's system by replacing at least one control unit 5.

Regarding **claim 6**, which is dependent on claim 2, "wherein the control signals are directed via a second transmitting device to an area of the associated control unit constructed for processing data in non-real time." – reads on second transmitting device

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"Field IO" 245A which brings data to the 1st device execution module 218A in the non-real-time area of the general purpose computer independent of the first transmitting device 248A. (col. 12, lines 57-62) It would have been obvious to one of ordinary skill in the art at the time of the invention to use the control unit of Lapham in the Grainger system because it minimizes the custom equipment needed and thereby limits the cost of the system.

Regarding **claim 36**, which is dependent on claim 31, "wherein display and control signals between the control units and the operating device can be transmitted on separate data channels." Reads on Lapham where control signal are transmitted through port 248A on Fig. 9, and control and feedback signals are transmitted through ports 245A and 242A. This is described at col.12. Lines 57-60. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the control unit of Lapham in the Grainger system because it minimizes the custom equipment needed and thereby limits the cost of the system.

Regarding **claim 37**, which is dependent on claim 36, "wherein [having] an opposite monitoring device constructed for monitoring a function and a target of the data channels." Reads on Grainger ¶68 where the link between the control and monitoring devices is monitored and if broken off, the connection via the transmission means is terminated.

Regarding **claim 27** which is dependent on claim 26, “wherein the control unit having the detecting device has a path control device on which action can take place through the detecting device, so that the movement relevant control signals can be directed via the first transmitting device to the control unit associated with the selected manipulators.” reads on Lapham’s control unit which incorporates a watchdog device fig. 9 222A/B//240A/B to assure that the non-real-time portion of the controller is viable. If it detects a failure, it shuts down the robot using the normal transmission means (col. 10, lines 5-12.) It would have been obvious to one of ordinary skill in the art at the time of the invention to use the control unit of Lapham in the Grainger system because it minimizes the custom equipment needed and thereby limits the cost of the system.

Regarding **claim 28**, which is dependent on claim 27, “wherein the movement-relevant control signals can be directed to the terminal device in parallel to a transmission to the associated control unit.” The Examiner takes official notice that when there is an operator’s terminal for a machine; it is kept informed of actions throughout the machine. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the control paths in Lapham’s control unit to send notification of the stoppage of the robots to the terminal device for safety and quick diagnosis of any problems.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant’s disclosure. U.S. Patent Pub. 2006/0184272 to Okazaki et al. shows

processing via both a real-time and non-real-time processing means, U.S. Patent No. 7,010,365 to Maymudes show adapting a common user interface to be a controller of a device and "Analysis of Open CNC Architecture for Machine Tools, presented at COBEM 99 shows using two busses to control manipulators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin B. Olsen whose telephone number is 571-272-9754. The examiner can normally be reached on M-F, 7:30am-5:00pm EST, Alternate Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian T. Pendleton can be reached on 571-272-7527. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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